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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/575,812	04/14/2006	Scott Albert Wiener	392458107US1	5238

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EXAMINER	
PARRIES, DRU M	
ART UNIT	**PAPER NUMBER**
2836	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/575,812	WIENER ET AL.	
	Examiner	Art Unit	
	Dru M. Parries	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 March 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed March 1, 2007 have been fully considered but they are not persuasive. Regarding the argument that Weiner and Jiang don't teach providing pulses with selectable voltage amplitudes and shapes, Weiner (the main reference) teaches a Marx high voltage pulse generator, which means it outputs a voltage. In addition, Jiang teaches a control circuit (shaping network) for controlling the characteristics of signals (i.e. pulse shape, amplitude, and duration) provided at the output of a pulse generator (Marx generator of Weiner is a type of pulse generator). By modifying the Weiner reference with Jiang's control circuit, thereby having a controller for controlling the shape, amplitude and duration of the voltage output of Weiner's high voltage generator, therefore, these references together read on that limitation.

2. Applicant's arguments with respect to claims 1, 5 and 6 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-3, 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weiner et al. (4,900,947), Halepete et al. (2002/0116650), and Jiang et al. (7,104,965). Weiner

teaches a pulser circuit comprising a first node (above C1), a voltage supply (13) charging the first node, and a switching network having a first switch (S1) that when closed shorts the first node to ground. He also teaches an RC network with a resistor (Ro), and a capacitor (C1) in parallel with the switch (S1). He teaches when the switch is open, the RC network is charging and when the switch is closed the RC network discharges, thereby generating an electrical pulse. He teaches the switching network connected in series with the RC network (Fig. 1; Col. 2, lines 29-40, 51-55, 65-68; Col. 3, lines 1-3; Col. 5, lines 7-11). Weiner fails to teach the voltage supply being configured to provide selectable output voltages at different voltages. Halepete teaches a voltage supply configured to provide different selectable output voltages (2nd line of claim 2 of Halepete). It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute Halepete's voltage supply into Weiner's invention so that Weiner's pulser circuit could be able to provide a selected output voltage at any magnitude at any time. Weiner also fails to teach his pulser circuit having a shaping network for providing voltage pulses of selectable amplitudes, shapes, and frequencies. Jiang teaches a pulse generator with a shaping network for providing pulses of selectable amplitudes, shapes and frequencies (Col. 5, lines 18-23). It would have been obvious to one of ordinary skill in the art at the time of the invention to have a shaping network in Weiner for controlling the output voltage pulses because it would allow the system to vary the output voltage depending on which type of load is being powered and the necessary output voltage needed by that load. Weiner also fails to explicitly teach the time constant of the RC network being less than 33 microseconds, the pulse frequency being between 10KHz and 1MHz, or the voltage amplitude being between 60 and 3000 volts. It would have been obvious to one of ordinary skill in the art at the time of the invention to have

the above parameters being in the specified ranges, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Weiner et al. (4,900,947), Halepete et al. (2002/0116650), and Jiang et al. (7,104,965) as applied to claim 1 above, and further in view of Shrier (2005/0083163). Weiner, Halepete, and Jiang teach a pulser circuit as described above. Weiner fails to explicitly teach a shunting network. Shrier teaches a shunting network for shunting transient signals that will dissipate away from the device to be protected (i.e. load) to a low impedance node ([0003]). It would have been obvious to one of ordinary skill in the art at the time of the invention to implement a shunting network to protect the load from transient signals.

6. Claims 5 and 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Panitz (3,868,507), Weiner et al. (4,900,947), Halepete et al. (2002/0116650), and Bosco et al. (2002/0117716). Panitz teaches an atom probe comprising a micro-channel plate (34), an analysis aperture (20, 24), a first node (18), and a specimen (10) positioned proximate the analysis aperture. Panitz also teaches a high voltage pulser supply circuit (63) to create a portion of a voltage potential between the specimen and the analysis aperture (Fig. 1; Col. 7, lines 62-68; Col. 8, lines 1-3). Panitz fails to explicitly teach the inner circuitry of the pulser supply circuit. Weiner teaches a pulser supply circuit comprising a voltage supply (13) charging a first node (above C1), and a switching network having a first switch (S1) that when closed shorts the first node to ground (termination network). He teaches each of the switches (S1-SN) being an optically activated semiconductor switch. He also teaches an RC network with a resistor (Ro),

and a capacitor (C1) in parallel with the switch (S1). He teaches when the switch is open, the RC network is charging and when the switch is closed the RC network discharges, thereby generating an electrical pulse. He teaches the switching network connected in series with the RC network (Fig. 1; Col. 2, lines 29-40, 51-58, 65-68; Col. 3, lines 1-3; Col. 5, lines 7-11). It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute Weiner's pulser supply circuit and circuitry into Panitz' invention, since Panitz was silent as to the inner circuitry and how the pulser circuit produces the voltage pulses. Panitz and Weiner fail to teach the voltage supply being configured to provide selectable output voltages at different voltages. Halepete teaches a voltage supply configured to provide different selectable output voltages (2nd line of claim 2 of Halepete). It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute Halepete's voltage supply into the modified Panitz' invention so the pulser circuit could be able to provide a selected output voltage at any magnitude at any time. The modified Panitz' invention fails to teach the semiconductor switches (S1-SN) comprising a MOSFET, first and second switches, and a blocking diode. Bosco teaches a semiconductor switch comprising a first switch (MOSFET), a second switch stacked on the first switch being a blocking diode and a bypass diode ([0027]). It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute Bosco's semiconductor switch into the modified Panitz' invention since Weiner was silent as to the internal structure of the switches (S1-SN) and Bosco teaches a semiconductor switching arrangement known to work in the art. The modified Panitz invention also fails to explicitly teach the time constant of the RC network being less than 33 microseconds. It would have been obvious to one of ordinary skill in the art at the time of the invention to have the time constant of the RC network being less than 33

microseconds, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

7. Claims 6, 14, 15, 16, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Panitz (3,868,507), Weiner et al. (4,900,947), Halepete et al. (2002/0116650), and Jiang et al. (7,104,965). Panitz teaches an atom probe comprising a micro-channel plate (34), an analysis aperture (20, 24), a first node (18), and a specimen (10) positioned proximate the analysis aperture. Panitz also teaches a high voltage pulser supply circuit (63) to create a portion of a voltage potential between the specimen and the analysis aperture (Fig. 1; Col. 7, lines 62-68; Col. 8, lines 1-3). Panitz fails to explicitly teach the inner circuitry of the pulser supply circuit. Weiner teaches a pulser supply circuit comprising a voltage supply (13) charging a first node (above C1), and a switching network having a first switch (S1) that when closed shorts the first node to ground. He also teaches other switches connected in series (Col. 5, lines 9-11). He also teaches an RC network with a resistor (Ro), and a capacitor (C1) in parallel with the switch (S1). He teaches when the switch is open, the RC network is charging and when the switch is closed the RC network discharges, thereby generating an electrical pulse. He teaches the switching network connected in series with the RC network (Fig. 1; Col. 2, lines 29-40, 51-55, 65-68; Col. 3, lines 1-3; Col. 5, lines 7-11). It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute Weiner's pulser supply circuit and circuitry into Panitz' invention, since Panitz was silent as to the inner circuitry and how the pulser circuit produces the voltage pulses. Panitz and Weiner fail to teach the voltage supply being configured to provide selectable output voltages at different voltages. Halepete teaches a voltage supply configured to

provide different selectable output voltages (2nd line of claim 2 of Halepete). It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute Halepete's voltage supply into Weiner's invention so that Weiner's pulser circuit could be able to provide a selected output voltage at any magnitude at any time. The modified Panitz invention also fails to teach the pulser circuit having a shaping network for providing voltage pulses of selectable amplitudes, shapes, and frequencies. Jiang teaches a pulse generator with a shaping network for providing pulses of selectable amplitudes, shapes and frequencies (Col. 5, lines 18-23). It would have been obvious to one of ordinary skill in the art at the time of the invention to have a shaping network in Weiner's pulser supply circuit for controlling the output voltage pulses because it would allow the system to vary the output voltage depending on which type of load is being powered and the necessary output voltage needed by that load. Panitz also fails to explicitly teach the time constant of the RC network being less than 33 microseconds, the pulse frequency being between 10KHz and 1MHz, or the voltage amplitude being between 60 and 3000 volts. It would have been obvious to one of ordinary skill in the art at the time of the invention to have the above parameters being in the specified ranges, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

8. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Panitz (3,868,507), Weiner et al. (4,900,947), Halepete et al. (2002/0116650), and Jiang et al. (7,104,965) as applied to claim 6 above, and further in view of Bosco et al. (2002/0117716). Panitz, Weiner, Halepete, and Jiang teach an atom probe system as described above. Weiner also teaches a termination network (closing of switch (S1) which connects the first node to

ground). These references fail to teach the semiconductor switches (S1-SN) comprising a MOSFET and a blocking diode. Bosco teaches a semiconductor switch comprising a MOSFET and a blocking diode ([0027]). It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute Bosco's semiconductor switch into the modified Panitz' invention since Weiner was silent as to the internal structure of the switches (S1-SN) and Bosco teaches a semiconductor switching arrangement known to work in the art.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dru M. Parries whose telephone number is (571) 272-8542. The examiner can normally be reached on Monday -Thursday from 9:00am to 6:00pm. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry, can be reached on 571-272-2800 x 36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DMP

5-17-2007

5/18/07

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